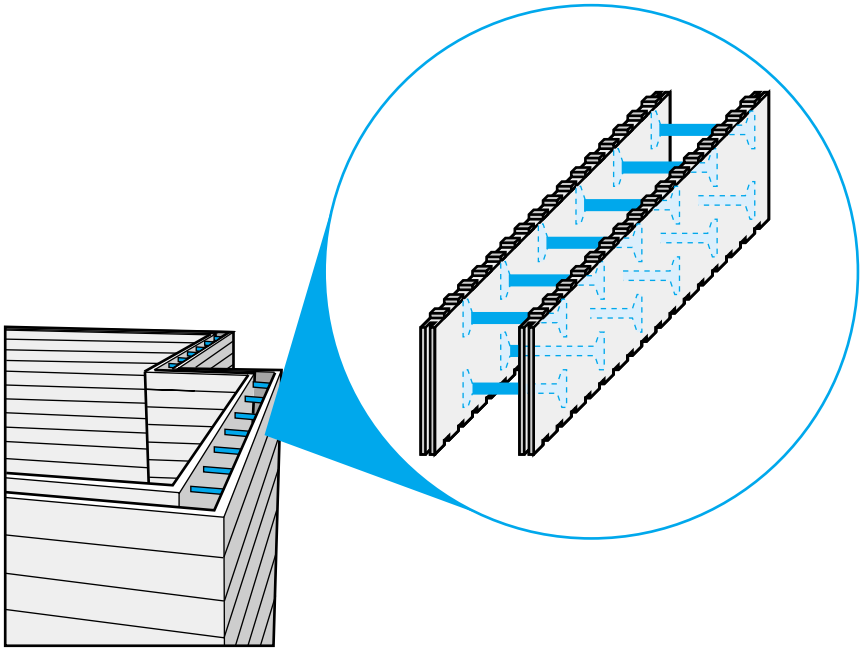
Improved Poured Concrete Wall-Forming System

Innovative System for Pouring Concrete Basements and Crawlspaces Achieves an R-22 Insulating Barrier

Building a house with a basement or crawlspace requires a strong foundation. Poured-in-place concrete is generally used. Poured-in-place concrete foundations are constructed by pouring wet concrete between vertical forms made of plywood or other material. Conventional forms are difficult to transport to the job site and assemble; however, these forms maintain the wall's structural integrity until the concrete is fully cured. The Lite-Form Concrete Wall-Forming System, developed with assistance from DOE's Inventions and Innovation Program, uses lightweight, highly insulative extruded polystyrene forms that can be manufactured as needed or easily assembled at the job site to create concrete walls. Workers assemble the forms using the patented system of ties. Concrete is then poured in the space between the forms. Hydrostatic forces on the forms during the pour and before the concrete solidifies are resisted by thermally insulating plastic ties. Once the concrete cures, the forms can be reused on another job or left in place. Leaving the forms in place provides up to R-22 insulation for the walls or foundation. At R-22, a typical basement (about 2500 ft^2 of wall) constructed with the Lite-Form system saves about 10 million Btu per year.

Purchasing the forms for constructing basements in commercial and residential buildings is becoming more popular each year. Potential builders can also purchase a machine to construct the forms at the job site significantly reducing transportation and labor costs. The technology has recently been extended to decks and light commercial walls for above-grade construction replacing some conventional construction systems.



Lite-Form Concrete Wall-Forming System

Overview

- Commercially available from Lite-Form International, Owens Corning, and other licensees
- Used for over 47 million sq ft of walls
- First sold in 1994

Energy Savings

(Trillion Btu)

Cumulative through 2003	2003
0.978	0.192

Emissions Reductions

(Thousand Tons, 2003)

Particulates	SO_X	NO_X	Carbon
0.0	0.024	0.025	3.33

Applications

A method for pouring concrete walls for buildings using rigid insulation board for each side of the concrete form

Capabilities

If left in place, the Lite-Form Concrete Wall-Forming System creates walls that are both load-bearing and thermally insulating—in a single operation.

Benefits

Environmental Benefits

The inside and outside forms are left in place or can be easily removed for use elsewhere rather than sent to a landfill. Lite-Form walls reduce the chance of moisture damage and radon gas contamination in basements.

Productivity

Under adverse conditions, such as very cold weather, the forms improve the strength of the concrete during construction, thereby extending the building season.

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